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a body portion for mounting within said circumferentially formed groove and having a longitudinal extent, a vertical extent, and a horizontal extent, and being particularly adapted for mounting in a portion of said diaphragm, said body portion having a brush mounting groove formed along said vertical extent and extending along said longitudinal extent; and

a plurality of brush segments mounted within said brush mounting groove of said packing ring segment, each said brush segment having a packet of bristles with said bristles having tip portions trimmed to terminate along a radius of curvature adapted to form a steam seal with said turbine shaft, and

each said bristle being disposed in a plane substantially parallel to the principal plane of said rotor and extending in the direction of rotation of said turbine shaft; and

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each segment further comprising:

an inner arcuate portion, an outer ring portion disposed within said groove for both axial and radial movement of said segment therein and having a pair of shoulders extending axially in opposite directions for making radial contact respectively with a pair of spaced apart shoulders on said casing and thereby limiting movement of said segment radially with respect to said shaft;

a neck portion connected between said inner arcuate portion and said outer ring portion and extending between said casing shoulders, said neck portion having an axial thickness which is less than the distance between said opposing casing shoulders to thereby axially locate said seal ring segment against one of said casing shoulders and provide a contact pressure seal at the said side of said neck portion which is subject to lower turbine fluid pressure; and

a radial positioning means comprising a spring against said ring segments to forcibly cause said segments to move radially [inward towards] outward away from said shaft, whereas working fluid flowing into to the annular space between said casing and said ring segments will urge said segments radially [outward away from] inward towards said shaft,

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whereby at low speed and small turbine loads the spring forces wil[t]l predominate, while at high flows and high working fluid pressure the pressure forces will predominate.

Please add the following new claims:

23-25. A moveable brush sealing system for inhibiting the flow of a working fluid between a rotating shaft and a stationary casing comprising:

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a stationary casing having a circumferential seal ring groove formed therein, said seal ring groove having an opening into a clearance area surrounding said shaft;

at least one segmented retractable seal ring including a plurality of seal segments, each of said seal ring segments including: (i) an outer member mounted within and supported by said seal ring groove, (i) an inner member mounted within said clearance area, said inner member including an outer surface facing said casing and an inner arcuate surface facing said rotating shaft, and (iii) a neck member extending through said opening in said seal ring groove and connecting said inner and outer members;

a spring biased against said seal ring segment to move said seal ring segment to a large diameter position in which said seal member has a large clearance with respect to said rotating shaft;

aperatures through the casing or through at least one of said segments to permit the free flow of working fluid into the seal ring groove to move the segment to a small diameter position in which the seal member has a small clearance with respect to the shaft; and

a seal member attached to the inner arcuate surface of said inner member of said seal segment, said seal member including a brush seal having an array of bristles that extend generally radially inwardly toward said rotating shaft.–

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24 ~~30~~. A moveable brush sealing system as claimed in claim ~~29~~ 23, in which said sealing member includes teeth attached to said inner arcuate surface which extend toward said rotating member effective to form a labrynth seal.–

25 ~~31~~. A moveable brush sealing system as claimed in claim ~~29~~ 23, in which said sealing member includes a plurality of teeth attached to said inner arcuate surface which extend toward said rotating member, and said shaft has raised areas cooperating with said teeth effective to form a labrynth seal.

26 ~~32~~. A seal as claimed in claim ~~29~~ 23, in which said seal member includes at least one circumferentially arranged brush mounting groove formed in said inner arcuate portion of said inner member and a plurality of brush segments mounted in said brush mounting groove, each of said brush segments having a packet of bristles with said bristles having tip portions trimmed to terminate along a radius of curvature adapted to form a fluid seal with said turbine shaft.–

27 ~~33~~. A seal as claimed in claim ~~32~~ 26, in which said brush segments include a packet of fine bristles bound and secured together between a front and back plate which are attached together to form a unitary segment structure, said back plate having an extent towards said shaft beyond the front plate to provide support for the packet of bristles.–

28 ~~34~~. A seal as claimed in claim ~~32~~ 26, in which said circumferential row of bristles are disposed in a plane substantially parallel to the principal plane of said rotating component and the ends of said bristles contact the rotating shaft when the seal member is at the small diameter small clearance position so that the bristles are deflected in the direction of rotation of said turbine shaft.–

29 ~~35~~. A seal for use in an elastic fluid turbine to minimize leakage of the working fluid between rotating and stationary components including:

a segmented seal ring supported by and at least partially contained in an annular seal ring groove formed in the stationary component to permit motion of said seal ring between a larger diameter position and a smaller diameter position

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corresponding respectively to the large and small clearance position of said seal ring with respect to the rotating component, said seal ring groove being partially defined by a pair of opposing, spaced apart shoulders disposed axially on said stationary component which form an opening of said groove extending radially into the clearance area between said stationary and said rotating components;

each segment of said seal ring including (i) an outer ring portion disposed within said seal ring groove for both axial and radial movement therein, (ii) an inner ring portion disposed in said clearance area which includes (a) an inner arcuate portion having a sealing member which includes a number of teeth extending therefrom in the direction of said rotating component and (iii) a neck portion connecting said inner ring portion and said outer ring portion and extending between said opposing, spaced apart shoulders on said stationary component, said neck portion having an axial thickness which is less than the distance between said opposing, spaced apart shoulders to permit said seal ring segment to move axially against one of said shoulders to provide a contact pressure seal at the side of said neck portion which is subject to lower turbine fluid pressure;

a compressed spring biased against said ring segments to forcibly cause said segments to move radially outwardly to said larger diameter large clearance position at shut off and under low turbine loads;

at least one opening formed in said stationary portion or in at least one of said segements to allow said working fluid to flow into the annular space between said casing and said ring segments to urge said segments radially inwardly toward said smaller diameter small clearance position as turbine load increases; and

wherein said sealing member further includes at least one brush element, said brush element including a circumferentially arranged row of bristles that extend from said inner arcuate portion of said inner ring portion toward said rotating component.–